

WE CLAIM:

1. An inflatable docking station/garage comprising:
  - an inflator for inflating said inflatable docking station/garage upon deployment at a desired location;
  - an interior portion suitable for housing a vehicle therein;
  - 5 a first communication system for communicating between said vehicle and said docking station/garage;
  - a second communication system for communicating between a remote location and at least one of said docking station/garage and said vehicle; and
  - 10 an environmental control system for providing a proper environment for storing said vehicle.
2. The inflatable docking station/garage according to claim 1, wherein:
  - said docking station/garage is located on a planet surface other than Earth; and
  - 5 said remote location is located on the planet Earth.
3. The inflatable docking station/garage according to claim 1, wherein said proper environment includes a temperature from about 40 to about 70°F.
4. The inflatable docking station/garage according to claim 1, further comprising:
  - solar panels disposed over at least a portion of an exterior surface of said docking station/garage;
  - 5 an energy storing system for storing electrical energy generated by said solar panels; and

a power box for connecting said vehicle to electrical energy either from said solar panels or from said energy storing system.

5        5.        The inflatable docking station/garage according to claim 4, further comprising a roof portion of said docking station/garage having at least one solar wing panel section attached thereto, wherein when said docking station/garage is inflated, said solar wing panel provides additional solar panel surface area.

6.        The inflatable docking station/garage according to claim 1, further comprising area sensors to detect the location of said vehicle and guide said vehicle to said docking station/garage when said vehicle completes a mission.

7.        The inflatable docking station/garage according to claim 1, further comprising guidance sensors for guiding said vehicle inside of said docking station/garage.

8.        The inflatable docking station/garage according to claim 1, further comprising precision sensors for accurately position said vehicle at a predetermined position inside said docking station/garage.

9.        The inflatable docking station/garage according to claim 1, further comprising an experiment module for offloading an experiment module from said vehicle and loading a new experiment module onto said vehicle when said vehicle is positioned in said docking station/garage.

10.       The inflatable docking station/garage according to claim 1, further comprising:

an outer section, enclosed on a top portion and at least two side portions, said outer section having an opening on two opposing sides, sized to  
5 allow said vehicle to pass therein;

an inner section, attached to said outer section;

a door on a portion of an exterior wall of said inner section, said door communicating said inner section with one of said two opposing sides of said outer portion, thereby allowing said vehicle to pass through said outer  
10 portion into said inner portion.

11. The inflatable docking station/garage according to claim 1, wherein walls of said docking station/garage are made of a self-rigidizing material that rigidizes upon contact with air.

12. The inflatable docking station/garage according to claim 11, wherein the walls of said docking station/garage are inflatable and are made of a self-rigidizing material.

13. The inflatable docking station/garage according to claim 1, further comprising a vehicle capable of entering and communicating with said docking station/garage.

14. An inflatable docking station/garage for deployment on a planet surface comprising:

an inflator for inflating said inflatable docking station/garage upon deployment at a desired location;

5 an interior portion suitable for housing a vehicle therein;

a first communication system for communicating between said vehicle and said docking station/garage;

a second communication system for communicating between a receiving station and at least one of said docking station/garage and said vehicle; and

10 an environmental control system for providing a proper environment for storing said vehicle.

15. The inflatable docking station/garage according to claim 14, wherein said control station is located on Earth and said planet surface is on the surface of Mars.

16. The inflatable docking station/garage according to claim 14, further comprising:

solar panels disposed over at least a portion of an exterior surface of said docking station/garage;

5 an energy storing system for storing electrical energy generated by said solar panels;

a power box for connecting said vehicle to electrical energy either from said solar panels or from said energy storing system; and

10 a roof portion of said docking station/garage having at least one solar wing panel section attached thereto, wherein when said docking station/garage is inflated, said solar wing panel section provides additional solar panel surface area.

17. The inflatable docking station/garage according to claim 14, further comprising:

area sensors to detect the location of said vehicle and guide said vehicle to said docking station/garage when said vehicle completes a mission;

5 guidance sensors for guiding said vehicle inside of said docking station/garage; and

precision sensors for accurately position said vehicle at a predetermined position inside said docking station/garage.

18. The inflatable docking station/garage according to claim 14, further comprising:

an outer section, enclosed on a top portion and at least two side portions, said outer section having an opening on two opposing sides, sized to  
5 allow said vehicle to pass therein;

an inner section, attached to said outer section;

a door on a portion of an exterior wall of said inner section, said door communicating said inner section with one of said two opposing sides of said outer portion, thereby allowing said vehicle to pass through said outer  
10 portion into said inner portion; and

an experiment module, in said inner section, for offloading an experiment module from said vehicle and loading a new experiment module onto said vehicle when said vehicle is positioned in said docking station/garage.

19. An inflatable, remotely deployable facility for docking or storing a Mars roving vehicle on the surface of Mars, comprising:
- an inflator for inflating said inflatable docking station/garage upon deployment at a desired location;
  - 5 an interior portion suitable for housing said Mars roving vehicle therein;
  - a first communication system for communicating between said Mars roving vehicle and said facility;
  - a second communication system for communicating between said
  - 10 Earth-based remote control station and at least one of said facility and said Mars roving vehicle; and
  - an environmental control system for providing a proper environment for storing said Mars roving vehicle.
20. The facility according to claim 19, further comprising:
- solar panels disposed over at least a portion of an exterior surface of said docking station/garage;
  - an energy storing system for storing electrical energy generated
  - 5 by said solar panels;
  - a power box for connecting said vehicle to electrical energy either from said solar panels or from said energy storing system;
  - a roof portion of said docking station/garage having at least one solar wing panel section attached thereto, wherein when said docking
  - 10 station/garage is inflated, said solar wing panel section provides additional solar panel surface area;
  - area sensors to detect the location of said vehicle and guide said vehicle to said docking station/garage when said vehicle completes a mission;
  - guidance sensors for guiding said vehicle inside of said docking
  - 15 station/garage; and

precision sensors for accurately position said vehicle at a predetermined position inside said docking station/garage.

21. The facility according to claim 19, further comprising:

an outer section, enclosed on a top portion and at least two side portions, said outer section having an opening on two opposing sides, sized to allow said vehicle to pass therein;

5 an inner section, attached to said outer section;

a door on a portion of an exterior wall of said inner section, said door communicating said inner section with one of said two opposing sides of said outer portion, thereby allowing said vehicle to pass through said outer portion into said inner portion; and

10 an experiment module, in said inner section, for offloading an experiment module from said vehicle and loading a new experiment module onto said vehicle when said vehicle is positioned in said docking station/garage.

22. An inflatable docking station/garage for storing or docking a Mars rover, comprising:

an inflator for inflating said docking station/garage upon deployment at a desired location;

5 an outer section, enclosed by a top portion and at least two side portions, said outer section having an opening on two opposing sides, sized to allow said Mars rover to pass therein;

an inner section, attached to said outer section;

10 a door on a portion of an exterior wall of said inner section, said door communicating said inner section with one of said two opposing sides of said outer portion, thereby allowing said vehicle to pass through said outer portion into said inner portion;

a first communication system for communicating between said Mars rover and said docking station/garage;

- 15                   a second communication system for communicating between an  
Earth-based remote control station and at least one of said docking  
station/garage and said Mars rover;  
                    an environmental control system for providing a proper  
environment for storing said Mars rover;  
20                   solar panels disposed over at least a portion of an exterior surface  
of said docking station/garage;  
                    an energy storing system for storing electrical energy generated  
by said solar panels;  
                    a power box for connecting said Mars rover to electrical energy  
25 either from said solar panels or from said energy storing system;  
                    a roof portion of said docking station/garage having at least one  
solar wing panel section attached thereto, wherein when said docking  
station/garage is inflated, said solar wing panel section provides additional solar  
panel surface area;  
30                   area sensors to detect the location of said vehicle and guide said  
vehicle to said docking station/garage when said vehicle completes a mission;  
                    guidance sensors for guiding said vehicle inside of said docking  
station/garage; and  
                    precision sensors for accurately position said vehicle at a  
35 predetermined position inside said docking station/garage.

23. The docking station/garage according to claim 22, further comprising:

- an experiment section, in said inner section, for offloading an  
experiment module from said vehicle and loading a new experiment module  
5 onto said vehicle when said vehicle is positioned in said docking station/garage.

24. An inflatable docking station/garage comprising:

- a vehicle designed for exploring a surface of an astrological body;

- an inflator for inflating said docking station/garage upon deployment at a desired location;
- 5           an outer section, enclosed by a top portion and at least two side portions, said outer section having an opening on two opposing sides, sized to allow said vehicle to pass therein;
- an inner section, attached to said outer section;
- a door on a portion of an exterior wall of said inner section, said
- 10 door communicating said inner section with one of said two opposing sides of said outer portion, thereby allowing said vehicle to pass through said outer portion into said inner portion;
- a first communication system for communicating between said vehicle and said docking station/garage;
- 15           a second communication system for communicating between an Earth-based remote control station and at least one of said docking station/garage and said vehicle;
- an environmental control system for providing a proper environment for storing said vehicle;
- 20           solar panels disposed over at least a portion of an exterior surface of said docking station/garage;
- an energy storing system for storing electrical energy generated by said solar panels;
- a power box for connecting said vehicle to electrical energy either
- 25 from said solar panels or from said energy storing system;
- a roof portion of said docking station/garage having at least one solar wing panel section attached thereto, wherein when said docking station/garage is inflated, said solar wing panel section provides additional solar panel surface area;
- 30           area sensors to detect the location of said vehicle and guide said vehicle to said docking station/garage when said vehicle completes a mission;

guidance sensors for guiding said vehicle inside of said docking station/garage; and

precision sensors for accurately position said vehicle at a  
35 predetermined position inside said docking station/garage.

25. The docking station/garage according to claim 24, further comprising:

an experiment section, in said inner section, for offloading an experiment module from said vehicle and loading a new experiment module  
5 onto said vehicle when said vehicle is positioned in said docking station/garage.

26. A method for storing and docking a planet surface roving vehicle, comprising:

energizing a power box located within an interior portion of a docking station/garage;  
5 guiding said roving vehicle inside said interior portion;  
electrically connecting said power box with said roving vehicle;  
and

providing a proper environment within said interior portion with an environmental control system.

27. The method according to claim 26, wherein said power box is energized from solar panels disposed over at least a portion of an exterior surface of said docking station/garage.

28. The method according to claim 27, further comprising:  
storing energy generated by said solar panels in an energy storing system; and

energizing said power box with at least one of said energy storing  
5 system and said solar panels.

29. The method according to claim 26, further comprising:  
detecting the location of said roving vehicle with area sensors;  
guiding said vehicle into said interior portion of said docking  
station/garage with guidance sensors; and  
5 accurately positioning said vehicle within said interior portion with  
precision sensors.
30. The method according to claim 26, further comprising:  
partitioning said docking station/garage into an outer section and  
an inner section, said outer section communicating an exterior of said docking  
station/garage with said inner section;  
5 providing a door in said inner section, wherein said outer section  
protects said inner section from direct environmental conditions when said door  
is open to let said roving vehicle enter and exit.
31. The method according to claim 26, further comprising:  
fabricating walls of said docking station/garage of a sealed two-  
layer fabric system, said fabric system including a self-rigidizing material  
capable of rigidizing upon contact with air;  
5 inflating air into an interior of said sealed two-layer fabric system,  
thereby rigidizing said self-rigidizing material.

32. A method of performing experiments on a surface of an astrological body in space comprising:

5 placing on said astrological body a docking station/garage that comprises an interior portion suitable for housing a vehicle therein, a first communication system for communicating between said vehicle and said docking station/garage, a second communication system for communicating at least one of said docking station/garage and said vehicle with a remote location, and an environmental control system for providing a proper environment for storing said vehicle; and

10 sending said vehicle across said surface to conduct said experiments within a first exploration area, wherein said vehicle contains an experiment module.

33. The method according to claim 32, further comprising changing said experiment module, when said experiments are complete, at an experiment changing station located inside said docking station/garage.

34. The method according to claim 32, further comprising moving said docking station/garage to additional exploration areas, thereby increasing the range of the vehicle.